



Chapter 1 Acid Deposition



Camping is an activity enjoyed by many people worldwide. After a full day of activities such as hiking or canoeing, there is nothing like sitting around and enjoying the light and warmth of a campfire with friends or family.

To enjoy a camping trip, you need activities and manufactured items that require the combustion of fuel. At the campsite, fuels are burned for heating, cooking, and light. To drive to the campsite, you need fuel for automobiles and camping trailers. Even the manufacturing processes for making the tent, trailer, and camping equipment requires an abundance of fuel.

Since the 1960s, scientists have been collecting evidence that some of the products of fuel combustion are negatively affecting the environment. What evidence is there? What are some of the effects on the environment? Are there ways to reverse or control these effects? These are some of the questions you will explore throughout this chapter.

Try This Activity

Detection Limits

Advances in technology have led to sophisticated and sensitive apparatus that are able to detect substances at very low concentrations. The detection of a substance is the first step toward understanding the impact of its presence within the environment.

Purpose

You and a partner will perform an analysis that simulates the relationship between detection limits and the amount of information available.

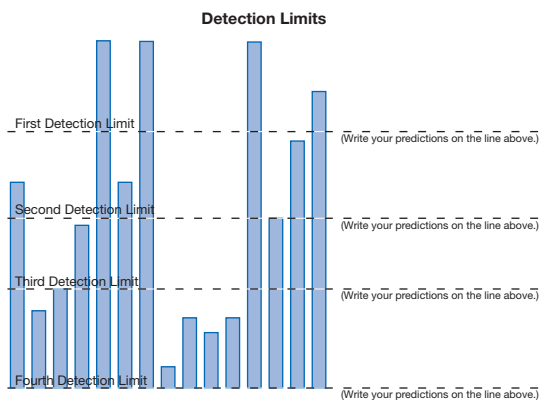
Procedure

Obtain the “Detection Limits” handout from the Science 30 Textbook CD. You will need one copy for each person.



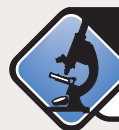
step 1: You and your partner must create a sentence that contains 8 to 15 words. Do not share your sentences.

step 2: Write the words of your sentence into the top part of the bars—one word per bar—on the “Detection Limits” handout.



Science Skills

✓ Analyzing and Interpreting



step 3: Cover the handout you prepared in step 2 with cardboard or a sheet of heavy paper.

step 4: Have your partner pull the piece of cardboard down to the dotted line labelled “First Detection Limit” and read the words that are visible.

step 5: Have your partner use the visible words to predict what the sentence is. His or her prediction should be written in the space provided on the handout.

step 6: Repeat steps 4 and 5 for the remaining detection limits.

Analysis

1. Compare the predictions you made at each detection limit. At what point was your prediction reasonably close to the actual sentence? At what point was your prediction identical (or nearly identical)?
2. Assume that each bar on the page represents a different chemical substance associated with a chemical process. These may be reactants, products, or by-products of the process. Assume that the height of each bar represents the concentration of a substance. If you were studying the chemical process, at which detection limit would you want to collect information? Explain your reasoning.
3. If each bar represents a different chemical substance that could be released into the environment, identify which bars would be of greatest concern. Support your answer.